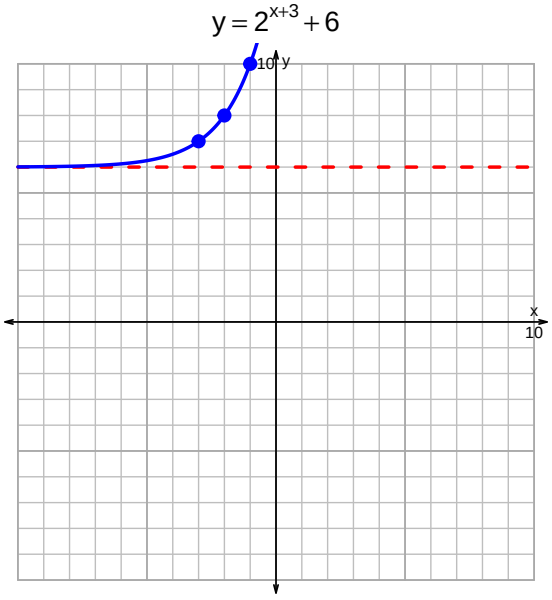
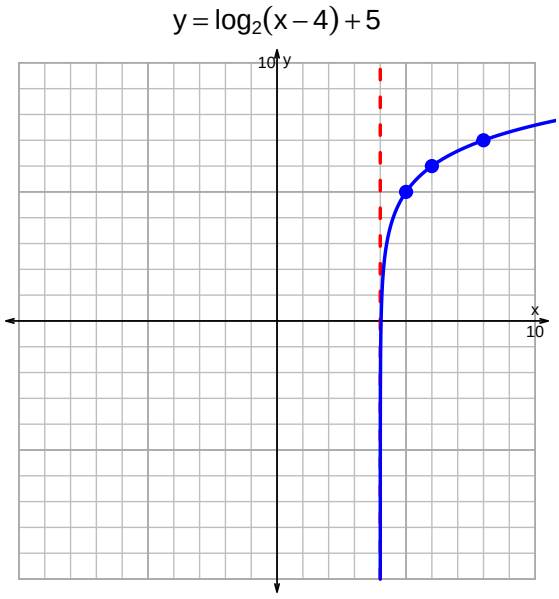
Name: Date:

S18QUIZ: EXP LOG (SLTN v258)

1. Graph $y = 2^{x+3} + 6$ and $y = \log_2(x-4) + 5$ on the grids below. Also, draw any asymptotes with dotted lines.





2. Write (but do not evaluate) the solution to the equation below by writing a logarithmic expression.

$$17 = \left(\frac{4}{7}\right) \cdot 2^{-5t/3}$$

Divide both sides by $\frac{4}{7}$.

$$\frac{17 \cdot 7}{4} = 2^{-5t/3}$$

Take log, base 2, of both sides.

$$\log_2\left(\frac{17 \cdot 7}{4}\right) = \frac{-5t}{3}$$

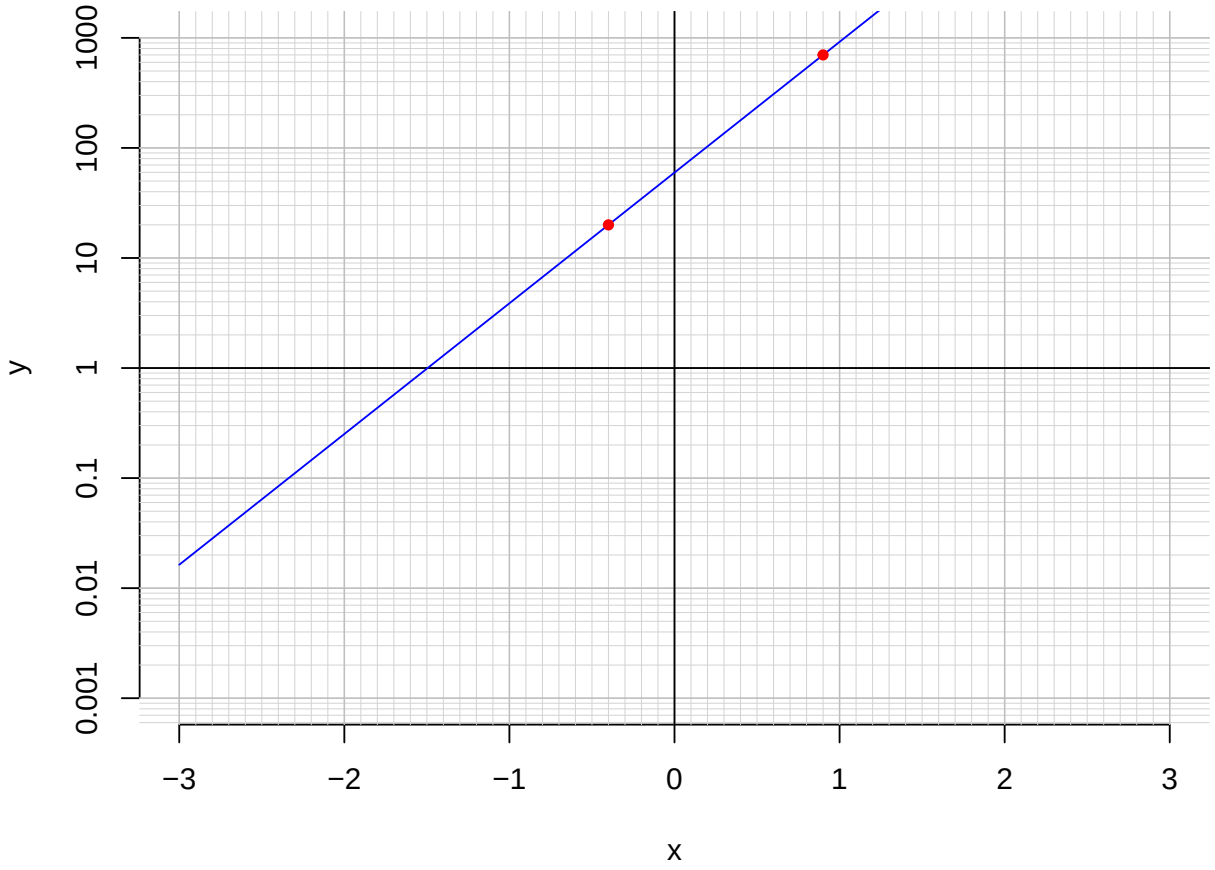
Divide both sides by $\frac{-5}{3}$.

$$\frac{-3}{5} \cdot \log_2\left(\frac{17 \cdot 7}{4}\right) = t$$

Switch sides.

$$t = \frac{-3}{5} \cdot \log_2\left(\frac{17 \cdot 7}{4}\right)$$

3. An exponential function $f(x) = 59.7 \cdot e^{2.73x}$ is graphed below on a semi-log plot.



a. Using the plot above, evaluate $f(0.9)$.

$$f(0.9) = 700$$

b. Express $f^{-1}(x)$, the inverse of f.

$$f^{-1}(x) = \frac{1}{2.73} \cdot \ln\left(\frac{x}{59.7}\right)$$

c. Using the plot above, evaluate $f^{-1}(20)$.

$$f^{-1}(20) = -0.4$$